RESEARCH DEPARTMENT

The Service Area of the Temporary Television Transmitter at Douglas, Isle of Man

Report No. K.100

Serial No. 1954/33

THE BRITISH BROADCASTING CORPORATION
ENGINEERING DIVISION

RESEARCH DEPARTMENT

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1. SUMMARY.

This report gives the results of a survey of the service area of the temporary television transmitter at Douglas, Isle of Man.

2. INTRODUCTION.

The plan for increasing the percentage of the population provided with a television service provides for seven low power transmitters in Band I in addition to the five high power transmitters and six medium power transmitters. The five high power transmitters have been in service for a considerable period and temporary low power transmitters are now in service in three of the areas which will ultimately be served by permanent medium power transmitters.

A fourth temporary low power transmitter has been established in the Isle of Man to provide a service there until the permanent low power transmitter is in operation.

3. GENERAL.

The site which appears suitable for the permanent transmitter for the Isle of Man is at Injebreck Hill, 1350 ft above sea level, about 6½ miles (10·5 km.) N.N.W. of Douglas. Unfortunately, mains supplies, etc., were not available at this site and the temporary transmitter could not be installed there by the required date—Christmas 1953. It was therefore necessary to use a more readily available site at Carnane, about 1 mile (1·6 km.) south of Douglas.

A Research Department recommendation was made that the effective radiated power from the temporary transmitter at the Carnane site should be limited to about 1 watt on Channel 5, using vertical polarisation, in order to limit the average field strength received in the town of Douglas to something of the same order as that expected from the permanent transmitter near the centre of the island. Unfortunately, local pressure caused a policy decision to be made to increase the ERP to 250 watts to

overcome the very bad electrical interference and to extend the service area outside the town of Douglas.

Except in Douglas, all 33 kV and 240 V power distribution is by means of overhead lines. In a salt-laden atmosphere such as that which exists all over the island, there is a considerable amount of arcing at the insulators, with resultant interference. A television receiver was installed in addition to the field strength measuring equipment in the vehicle making the survey, and viewing tests were carried out to determine the extent of the interference.

The source of programme is Holme Moss and the signal received at a point near the site is of sufficiently good quality for re-broadcasting.

4. RESULTS.

The results of the survey are presented as the field strength contour map T.235 (Fig. 1). Table 1 gives the maximum, mean and minimum field strengths in the principal towns in the island.

It will be seen that Douglas, the main town in the island, has an average field strength of 46 mV/m.

Ramsey, with an average field strength of 0·02 mV/m, is not served from this site. In Peel the average field strength is 0·2 mV/m which provides only a fair to poor service. Castletown, an important residential area, has an average field strength of 0·3 mV/m and has, therefore, a fair service.

In general, while Douglas and its immediate environs are well served from this temporary transmitter, the northern half of the island and the west and south coastal areas are not served.

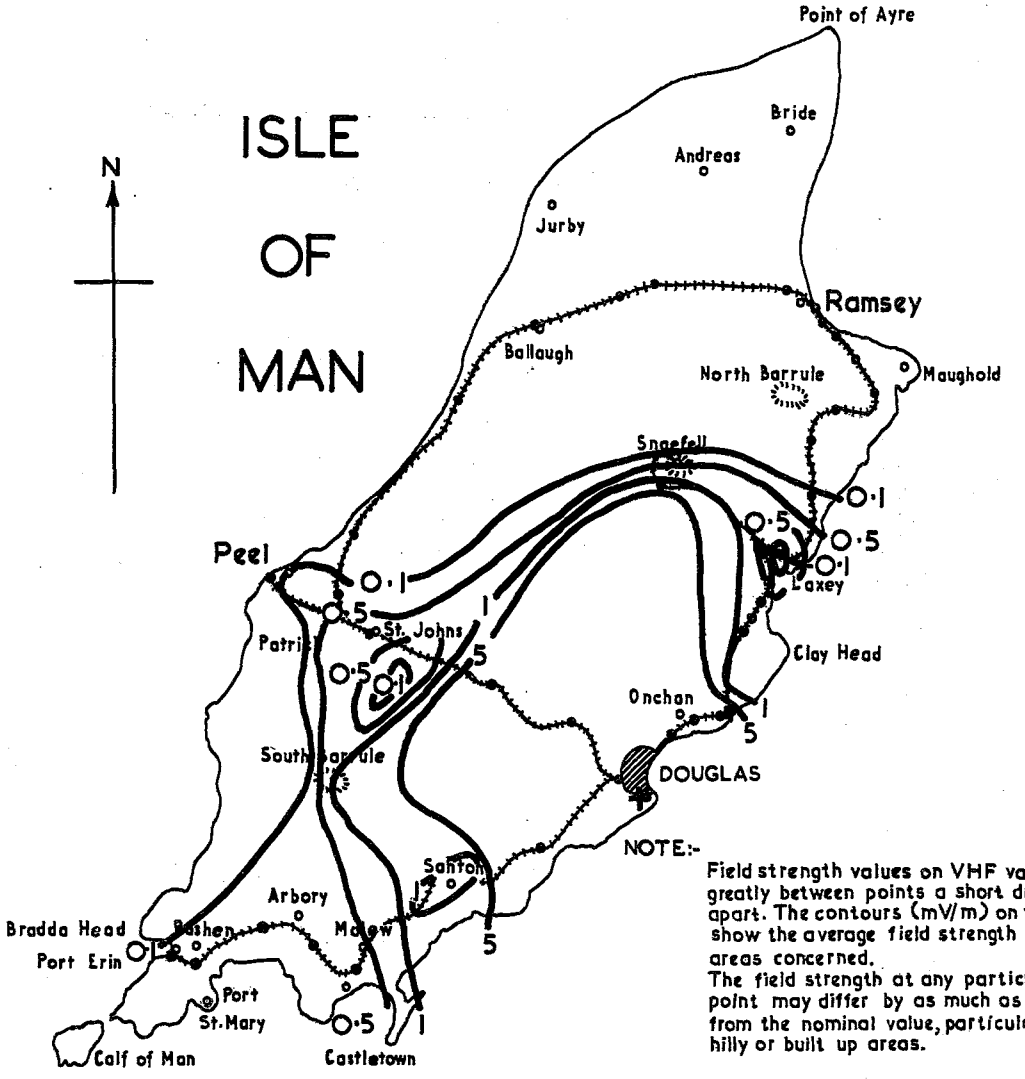
The general level of electrical interference in the island was found to be high in the vicinity of overhead power lines.

5. CONCLUSIONS.

The temporary transmitter provides Douglas, the major town in the island, with an excellent service, the average field strength being 46 mV/m, much greater than the average field strength provided in any other town of similar size in the whole of the United Kingdom. About half the total population of the island receives a field strength which would be adequate in the absence of the severe electrical interference.

There is doubt as to whether the permanent site will be acceptable to viewers in Douglas on account of the decreased field strength which is bound to occur. It would seem that only by an effort on the part of the authorities concerned to suppress the serious radiated interference can a service be provided to all parts of the island.

T.235



NOTE:-

Field strength values on VHF vary greatly between points a short distance apart. The contours (mV/m) on this map show the average field strength in the areas concerned.
The field strength at any particular point may differ by as much as ± 10 dB from the nominal value, particularly in hilly or built up areas.

DOUGLAS
(measured)

E.R.P. = 0·25kW
Channel 5 (66·75mc/s)
Site height = 491 ft
Aerial height = 40 ft
Polarisation — Vertical.

Fig.1

Scale of miles
5 0 5 10
5 0 5 10 15
Scale of kilometres

TABLE 1

Town	Field Strength (mV/m 30 ft a.g.l.)		
	Maximum	Mean	Minimum
Castletown	0·5	0·3	0·1
Douglas	80	46	14
Laxey	0·44	0·06	0·03
Peel	0·6	0·2	0·05
Port Erin	0·4	0·2	0·1
Port St. Mary	0·7	0·3	0·1
Ramsey	0·03	0·02	0·01
St. Johns	1·1	0·6	0·3

APPENDIX

Site Data

Latitude	54° 08' 25" N
Longitude	04° 29' 32" W
Grid reference	24/373746
Height above mean sea level	491 ft
Aerial height	40 ft